

“Ict Usage and Perception of Higher Education Teachers”

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ABSTRACT: *Global developments in education and challenging ICT demands have made a remarkable shift in the structure of the enabling ICT environment and the utilization of ICT technologies in education. Such technologies have become the key force of the digital network in an era of technology-driven education. More schools and communities now have access to ICT resources to join the global economy with knowledge workers who have 21st century skills and are inspired by life-long learning. ICTs have great potential for knowledge dissemination, effective learning, and the development of more efficient educational services. Moreover, the adoption of ICT by education has been seen as a powerful way to contribute to educational change, better prepare students for the information age, improve learning outcomes and competencies of learners, and equip students with survival skills for the information society. ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor. One of the greatest hardships endured by the poor, and by many others who live in the poorest countries, is their sense of isolation. The new communications technologies promise to reduce that sense of isolation, and to open access to knowledge in ways unimaginable not long ago. ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment.*

KEYWORDS: *ICT, Internet.*

I. INTRODUCTION

ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor. One of the greatest hardships endured by the poor, and by many others who live in the poorest countries, is their sense of isolation. The new communications technologies promise to reduce that sense of isolation, and to open access to knowledge in ways unimaginable not long ago. Globalization and technological change—processes that have accelerated in tandem over the past fifteen years—have created a new global economy “powered by technology, fuelled by information and driven by knowledge.” The emergence of this new global economy has serious implications for the nature and purpose of educational institutions. Concerns over educational relevance and quality coexist with the imperative of expanding educational opportunities to those made most vulnerable by globalization—developing countries in general. Low-income groups, girls and women, and low-skilled workers in particular. Global changes also put pressure on all groups to constantly acquire and apply new skills. Although most commonly associated with higher education and corporate training, e-learning encompasses learning at all levels, both formal and non-formal, that uses an information network—the Internet, an intranet (LAN) or extranet (WAN)—whether wholly or in part, for course delivery, interaction and/or facilitation. Others prefer the term online learning. Web-based learning is a subset of e learning and refers to learning using an Internet browser (such as Netscape or Internet Explorer).

ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. Technologies include computers, the Internet, broad casting technologies (radio and television), and telephony. In recent years there has been a groundswell of interest in how computers and the Internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings. But ICTs are more than just these technologies older technologies such as the telephone, radio and television, although now given less attention, have a longer and richer history as instructional tools. For instance, radio and television have for over forty years been used for open and distance learning, although print remains the cheapest, most accessible and therefore most dominant delivery mechanism in both developed and developing countries. The use of computers and the Internet is still in its infancy in developing countries, if these are used at all, due to limited infrastructure and the attendant high costs of access.

Moreover, different technologies are typically used in combination rather than as the sole delivery mechanism. For instance, the Kothmale Community Radio Internet uses both radio broadcasts and computer and Internet technologies to facilitate the sharing of information and provide educational opportunities in a rural community in Sri Lanka. The Open University of the United Kingdom (UKOU), established in 1969 as the first educational institution in the world wholly dedicated to open and distance learning, still relies heavily on print-based materials supplemented by radio, television and, in recent years, online programming. Similarly, the Indira Gandhi National Open University in India combines the use of print, recorded audio and video, broadcast radio and television, and audio.

We are living in a constantly evolving digital world. ICT has an impact on nearly every aspect of our lives - from working to socialising, learning to playing. The digital age has transformed the way young people communicate, network, seek help, access information and learn. We must recognise that young people are now an online population and access is through a variety of means such as computers, TV and mobile phones. As technology becomes more and more embedded in our culture, we must provide our learners with relevant and contemporary experiences that allow them to successfully engage with technology and prepare them for life after school is widely recognised that learners are motivated and purposefully engaged in the learning process when concepts and skills are underpinned with technology and sound pedagogy. Education Scotland provides advice on resources for practitioners, parents and pupils to engage with these technologies in order to inform and enhance the learning experience. Each of the different ICTs—print, audio/video cassettes, radio and TV broadcasts, computers or the Internet—may be used for presentation and demonstration, the most basic of the five levels. Except for video technologies, drill and practice may likewise be performed using the whole range of technologies. On the other hand, networked computers and the Internet are the ICTs that enable interactive and collaborative learning best; their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration.

Need for The Study: ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment.

- **Creative Learning.** ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the regurgitation of received information.
- **Integrative learning.** ICT-enhanced learning promotes a thematic, integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach.
- **Evaluative learning.** ICT-enhanced learning is student-directed and diagnostic. Unlike static, text- or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember.
- Each of the different ICTs—print, audio/video cassettes, radio and TV broadcasts, computers or the Internet—may be used for presentation and demonstration, the most basic of the five levels. Except for video technologies, drill and practice may likewise be performed using the whole range of technologies. On the other hand, networked computers and the Internet are the ICTs that enable interactive and collaborative learning best; their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration. ICT-based interventions must take into account current institutional practices and arrangements. Specifically, drivers and barriers to ICT use need to be identified, including those related to curriculum and pedagogy, infrastructure, capacity-building, language and content, and financing.
- The specification of educational goals at different education and training levels as well as the different modalities of use of ICTs that can best be employed in pursuit of these goals. This requires of the policymaker an understanding of the potentials of different ICTs when applied in different contexts for different purposes, and an awareness of priority education needs and financial and human resource capacity and constraints within the country or locality, as well as best practices around the world and how these practices can be adapted for specific country requirements.
- The identification of stakeholders and the harmonizing of efforts across different interest groups. The piloting of the chosen ICT-based model. Even the best designed models or those that have already been proven to work in other contexts need to be tested on a small scale. Such pilots are essential to identify, and correct, potential glitches in instructional design, implement ability, effectiveness, and the like.
- The specification of existing sources of financing and the development of strategies for generating financial resources to support ICT use over the long term.

Though a number of studies have focused on the different aspects of ICTs, majority of these studies were conducted during the period prior to 1995. In view of the importance attached to the added value to the Higher Education by Teachers with their positive approach, there have been pertinent results taken place. As a result, there is an imperative need to study the contemporary need of ICTs in higher education the present context.

II. OBJECTIVES:

- To identify the need, advantage of ICT learning
- To identify different tools used, methods of ICT Education
- To evaluate the need of ICTs usage and perception of teachers in higher education.
- To know the advantages/benefits of ICTs usage.

Methodology: The study is also based on the secondary data obtained from the different books, articles, journals, some unpublished articles, projects are also made use of to supplement the secondary data.

The Uses of ICTs in Education: Education policymakers and planners must first of all be clear about what educational outcomes are being targeted. These broad goals should guide the choice of technologies to be used and their modalities of use. The potential of each technology varies according to how it is used. Haddad and Draxler identify at least five levels of technology use in education: presentation, demonstration, drill and practice, interaction, and collaboration.

Each of the different ICTs—print, audio/video cassettes, radio and TV broadcasts, computers or the Internet—may be used for presentation and demonstration, the most basic of the five levels. Except for video technologies, drill and practice may likewise be performed using the whole range of technologies. On the other hand, networked computers and the Internet are the ICTs that enable interactive and collaborative learning best; their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration. Radio and television have been used widely as educational tools since the 1920s and the 1950s, respectively.

Types of Icts: Teleconferencing refers to “interactive electronic communication among people located at two or more different places.”³¹ There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology:

- 1) Audio conferencing; 2) Audio-graphic conferencing,
- 3) Videoconferencing; and 4) Web-based conferencing.

Audio conferencing involves the live (real-time) exchange of voice messages over a telephone network. When low-bandwidth text and still images such as graphs, diagrams or pictures can also be exchanged along with voice messages, then this type of conferencing is called audio graphic. Non-moving visuals are added using a computer keyboard or by drawing/writing on a graphics tablet or whiteboard.

Videoconferencing allows the exchange not just of voice and graphics but also of moving images. Videoconferencing technology does not use telephone lines but either a satellite link or television network(broadcast/cable). Web-based conferencing, as the name implies, involves the transmission of text, and graphic, audio and visual media via the Internet; it requires the use of a computer with a browser and communication can be both synchronous and a synchronous. Teleconferencing is used in both formal and non-formal learning contexts to facilitate teacher-learner and learner-learner discussions, as well as to access experts and other resource persons remotely. In open and distance learning, teleconferencing is a useful tool for providing direct instruction and learner support, minimizing learner isolation. For instance, an audio graphic teleconferencing network between Tianjin Medical University in China and four outlying Tianjin municipalities was piloted in1999 as part of a multi-year collaboration between Tianjin Medical University and the University of Ottawa School of Nursing funded by the Canadian International Development Agency.

Audio graphic teleconferencing network aims to provide continuing education and academic upgrading to nurses in parts of Tianjin municipality where access to nursing education has been extremely limited. Other higher education institutions using teleconferencing in their online learning programs include the Open University of the United Kingdom, Unitar (Universiti Tun Abdul Ruzak) in Malaysia, OpenUniversity of Hong Kong, and Indira Gandhi National Open University There are already a growing number of actors from higher education sector who are exploring Web 2.0 technologies in their activities with students or as part of their PLE. It is important to realize that Web 2.0 has to share something new with higher education - the development of a

clear picture of the features that might constitute a new ICT pedagogy in the 21st century. The using Web 2.0 technologies by the authors of this article as a support for preparing and collecting didactic materials, evaluating and analyzing the progress made by students, putting together informative and formative presentations, time management, planning the timetable and the calendar of activities, developing projects in collaboration, digital storytelling, students' portfolios etc.

- Models of integrating Web 2.0 technologies in HE Technology 2.0 Educational applications

Blogging:

- Use blogs for real-world writing experiences
- Pull class blogs together into one area for easy tracking quickly give feedback to students, and students to each other
- Students use peer networks to develop their own knowledge update new information such as homework and assignments.
- Using comments in blogs can encourage students to help each other with their writing, and get responses to a question without getting the same answer twenty times etc.

Microblogging:

- Classroom community, exploring collaborative writing, reader response, collaboration across schools, countries, project management, assessing opinion, platform for metacognition, conference or as part of a presentation or workshop, for reference or research, facilitating virtual classroom discussion, creating a learning experience, a Personal Learning Network.
- Use for dissemination of teachers' publications and materials, locating original sources of ideas, quotes, allows for very focused and concrete feedback to students to refine their thinking and improve their skills, fostering professional connections, informal research, for storytelling, follow a professional, get feedback on ideas, event updates, live coverage of events, build trust, build a community etc.

Wikis:

- Use for student projects; use for collaborating on ideas and organizing documents and resources from individuals and groups of students
- Use as a presentation tool (as e-portfolios); as a group research project for a specific idea.

Photo / Slides Sharing

- Share, comment, and add notes to photos or images to be used in the classroom inspire writing and creativity; create a presentation using the photos.
- Use tags to find photos of areas and events around the world for use in the classroom. post student presentations to an authentic audience and get feedback from around the world; share professional development materials and have it available anywhere, anytime, to anyone;
- Post presentations of special events Video Sharing video professional development on own terms; create an own subject specific videos with students; use video sharing sites to find videos on current issues etc.
- Syndication of content through RSS, professional development, time saving; updated information in teaching area information coming from constraining sources; sharing work with other educators RSS feeds can potentially replace traditional email lists, reducing email overload RSS feeds can be used to keep course specific web pages current and relevant etc. Social Bookmarking create a set of resources that can be accessed on any computer connected to the internet; conduct research and share that research with peers track author and book updates; groups of students doing a classroom project sharing their bookmarks; rate and review bookmarks to help with students decide on usefulness of resources; setup a group tag in order to share educational resources share one del.icio.us account between a number of different subject specific educators in order to share resources with each other etc. Social Networking event support and continuation, team and community support, aggregation of social media applications, personal learning environments etc. Other tools instant messaging increase the sense of community and accessibility which is required for collaborative learning; VoIP can promote international collaborations and understanding; calendars make calendar events, homework, anything you want available on mobile devices connected devices connected to the Internet survey and polls, online diagrams and web-based word processor, on-line spreadsheet, social search, mind mapping; virtual worlds - virtual conferences and seminars, team meetings and collaboration spaces,

Benefits of usage of ICTs for Higher Education:

- Promoting cognitive acceleration; enabling a wider range of experience so that students can relate science to their own and other real-world experiences; increasing students' self-management; and facilitating data collection and presentation. ICT-rich environments already provide a range of affordances that have been shown to enable learning of science but integrating these affordances with other pedagogical innovations provides even greater potential for enhancement of students' learning.
- Teacher accounts emphasized both the use of ICT to enhance and extend existing classroom practice, and change in terms of emerging forms of activity which complemented or modified practice. A gradual process of pedagogical evolution was apparent; teachers were developing and trialling new strategies specifically for mediating ICT-supported learning. In particular, these overcame the potentially obstructive role of some forms of ICT by focusing pupils' attention onto underlying learning objectives.
- Teachers mindsets must change to include the idea that "teaching is not effective without the appropriate use of information and communication technologies (ICT) resources to facilitate student learning." Implications are discussed in terms of both teacher education and professional development programs.
- Using the technology, pedagogy, and content knowledge (TPACK) framework as a way to think about effective technology integration, recognizing technology, pedagogy, content and context as interdependent aspects of teacher's knowledge necessary to teach content-based curricula effectively with educational technologies. We offer TPACK-based "activity types," rooted in previous research about content-specific activity structures, as an alternative to existing professional development approaches and explain how this new way of thinking may authentically and successfully assist teachers' and teacher educators' technology integration efforts.
- Teacher collaboration around software use and of teacher practices concerning classroom management and use of software-generated student performance data. The issues of instructional coherence and competition for instructional time are highlighted as challenges to software implementation, spanning the areas of attitudes, beliefs, skills, competencies, and technology integration proficiencies are used in modeling the process of technology integration, which is believed to be an important intermediary step in effective use of technology in teaching and learning.
- The perspective of teacher educators, the use of vicarious learning experiences and the incorporation of specific goals may help pre-service teachers develop the confidence they need to become effective technology users within their own classrooms.
- That convincing evidence of improved learning outcomes remains surprisingly elusive, and second, the unresolved debate over whether ICT should be conceived of as supporting delivery of a traditional or a radically different vision of pedagogy based on soft skills and new digital literacy's. The difficulty in establishing traditional benefits, and the uncertainty over pursuing alternative benefits, raises fundamental questions over whether society really desires a transformed, technologically-mediated relation between teacher and learner.
- Innovative use of ICT is defined as the use of ICT applications that support the educational objectives based on the needs of the current knowledge society. That several factors on teacher level influence the implementation of innovative ICT-use in education. Especially, teachers who are so-called 'personal entrepreneurs' are important for the integration of ICT in teacher education. School level factors turn out to be of limited importance for innovative use of ICT. This indicates a limited involvement of the management of teacher training institutes towards the use of ICT within the curriculum.
- The widespread adoption of information and communications technologies (ICT) in Higher Education (HE) since the mid 1990s has failed to produce the radical changes in learning and teaching than many anticipated. The changing role of ICT in the work of teachers. It investigates how HE teachers in one large distance learning university have, over time, appropriated ICT applications as teaching tools, and the gradual rather than revolutionary changes that have resulted.

Teachers Perception of Higher Education Using Icts: Understanding learners' perceptions regarding the effectiveness of information and communication technology (ICT) use, including those in the broad category of social media, is both important and critical to the success or failure of integration of ICT in higher education settings. Using theories of educational psychology and technology integration. Exploratory factor analyses followed by multiple regressions show that engaging lectures, effective use of ICT tools for individual study and

group-work, as well as active and self-regulated study strategies have a positive and significant impact on students' perceptions of course effectiveness. Results are discussed in light of research on social media tools, instructional effectiveness and gender difference in technology use.

- The rapid growth in Information Communication and Technologies (ICT) have brought remarkable changes in the twenty-first century and affected demands of the modern society. ICT is becoming increasingly important in our daily lives as well as in educational systems. Therefore, there is a growing demand on educational institutions to use ICT to teach the skills and knowledge that students need for the 21st century. Realizing the effect of ICT on the workplace and everyday life, today's educational institutions try to restructure their educational curricula and classroom facilities in order to bridge the existing technology gap in teaching and learning processes. This restructuring requires effective adoption of technologies into existing learning environments in order to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity. Education has immensely contributed to an increase in developing knowledge, providing an enabling environment for innovation and in building human capital required for a potential knowledge economy.
- Global developments in education and challenging ICT demands have made a remarkable shift in the structure of the enabling ICT environment and the utilization of ICT technologies in education. Such technologies have become the key force of the digital network in an era of technology-driven education. More schools and communities now have access to ICT resources to join the global economy with knowledge workers who have 21st century skills and are inspired by life-long learning. ICTs have great potential for knowledge dissemination, effective learning, and the development of more efficient educational services. Moreover, the adoption of ICT by education has been seen as a powerful way to contribute to educational change, better prepare students for the information age, improve learning outcomes and competencies of learners, and equip students with survival skills for the information society. Therefore, teachers are expected to integrate ICT into their teaching and learning processes. To successfully initiate and implement educational technology in the school program depends strongly on the teachers' support and attitudes. It is believed that if teachers perceived technology programs as neither fulfilling their own needs nor their students' needs, it is likely that they will not integrate the technology into teaching and learning.
- If teachers' attitudes are positive toward the use of educational technology, then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes. Some researchers studied the relationship between teachers' perceptions of the use of ICT and their actual integration of ICT into teaching and learning processes. Eugene (2006) explored the effect of teachers' beliefs and attitudes towards the use of ICT in classrooms. An observation method was used to collect data on teachers' beliefs and attitudes. The study revealed that there was inconsistency between teachers' beliefs and their actual use of technology in the classroom. Teachers' beliefs and teaching practices were found not to match. Similarly, Simonson (2004) used a quantitative study to explore the beliefs of primary school teachers on the use of ICT in teaching. The result revealed that teachers' beliefs and attitudes were related to their use of technology.
- The teacher's positivity about the possible contributions of ICT was moderated as they became 'rather more ambivalent and sometimes doubtful' about 'specific, current advantages' Teachers' computer experience relates positively to their computer attitudes. The more experience teachers have with computers, the more likely that they will show positive attitudes towards computers
- The teachers were more positive about their attitude towards computers and intention to use computer than their perceptions of the usefulness of the computer and their control of the computer. However, while there are a number of studies on teachers' perceptions, skills and practices of ICT in secondary schools in developed countries.

Challenges in 21st century:

Challenges in Integrating ICTs in Education: A country's educational technology infrastructure sits on top of the national telecommunications and information infrastructure. Before any ICT-based programme is launched, policymakers and planners must carefully consider the following:

- In the first place, are appropriate rooms or buildings available to house the technology? In countries where there are many old school buildings, extensive retrofitting to ensure proper electrical wiring, heating/cooling and ventilation, and safety and security would be needed.
- Another basic requirement is the availability of electricity and telephony. In developing countries large areas are still without a reliable supply of electricity and the nearest telephones are miles away. Experience in some countries in Africa point to wireless technologies (such as VSAT or Very Small Aperture Terminal) as possible levers for leapfrogging. Although this is currently an extremely costly approach, other developing countries with very poor telecommunications infrastructure should study this option.
- Policymakers should also look at the ubiquity of different types of ICT in the country in general, and in the educational system (at all levels) in particular. For instance, a basic requirement for computer-based or online learning is access to computers in schools, communities, and households, as well as affordable Internet service.

In general, ICT use in education should follow use in society, not lead it. Education programs that use cutting-edge technologies rarely achieve long term success. It is cheaper, and easier, to introduce a form of technology into education, and keep it working, where education is riding on the back of large-scale developments by governments or the private sector. Television works for education when it follows rather than precedes television for entertainment; computers in schools can be maintained once commercial and private use has expanded to the point where there is an established service industry.

Education administrators. Leadership plays a key role in ICT integration in education. Many teacher- or student-initiated ICT projects have been undermined by lack of support from above. For ICT integration programs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, curricular, administrative, financial, and social dimensions of ICT use in education.

Technical support specialists. Whether provided by in-school staff or external service providers, or both, technical support specialists are essential to the continued viability of ICT use in a given school.

Teacher Professional Development as the Cornerstone of Educational ICT Use: While many international and local organizations have focused on providing technology to schools, World has, over the years, built an impressive reputation as one of the world's leading providers of professional development services to teachers, school administrators and policymakers in developing countries around the world. Words Professional Development Program for Teachers, which is delivered primarily face-to The World Links for Development (World) Program began in Uganda in 1997 under the auspices of the World Bank Institute. Its goal was to help government to bring the benefits of the Internet and the World Wide Web to the country's secondary schools. The World Program has three components: Connectivity, Training, and Monitoring and face by international and local trainers, with follow-ups online, are in five phases:

REFERENCES:

1. Adkins,D. (1999),“Cost and Finance,” in Dock, A. and Helwig, J. (eds.), Interactive Radio Instruction:Impact, Sustainability, and Future Directions (Washington DC:World Bank Human DevelopmentNetwork Education Group, Education and Technology Team/USAID Advancing Basic Education and Literacy Project, Education Development Center). Cited in Perraton, H. and C. Creed,“Applying New Technologies...,”p. 40.
2. Hernes,G. (2002),“Emerging Trends in ICT and Challenges to Educational Planning,”in Haddad,W. and A.Drexler (eds.), Technologies for Education: Potentials, Parameters, and Prospects (Washington DC:Academy for Educational Development and Paris:UNESCO),pg-. 25.
3. Hawkins, R.,“Ten Lessons for ICT and Education in the Developing World”; available from
4. http://www.cid.harvard.edu/cr/pdf/gitrr2002_ch04.pdf; accessed 7 August 2002, p. 40.
5. Bates, A.“The Continuing Evolution of ICT Capacity: Implications for Education”, in Glen M.Farrell (ed.),The Changing Faces of Virtual Education; available fromhttp://www.col.org/virtualed/virtual2pdfs/Virtual2_complete.pdf; accessed 7 August 2002.pg-39

6. Haddad,Wadi D. & Alexandra Drexler (2002),“The Dynamics of Technologies for Education”, in Haddad,W. & Drexler, A. (eds.) *Technologies for Education: Potentials, Parameters, and Prospects* (Washington DC: Academy for Educational Development and Paris: UNESCO), p. 9.
7. Bransford, J., Brown, A., & Cocking, R. R. (2000). "Technology to support learning". In J. Bransford, A. Brown, & R. R. Cocking. *How people learn: Brain, mind, experience*. Washington, DC: National Academies Press. pp. 206–230.
8. Hernes,G. (2002),“Emerging Trends in ICT and Challenges to Educational Planning,”in Haddad,W. and A.Drexler (eds.), *Technologies for Education: Potentials, Parameters, and Prospects* (Washington DC:Academy for Educational Development and Paris:UNESCO),p. 25
9. Shurville, S.; Browne, T.; Whitaker, M. (2009). "Accommodating the newfound strategic importance of educational technologists within higher education: A critical literature review". *Campus-Wide Information Systems*. (3): 201–231.
10. D. Randy Garrison; Terry Anderson; Definitions and Terminology Committee (2003). *E-Learning in the 21st Century: A Framework for Research and Practice*. Routledge.ISBN 0-415-26346-8
11. Moore, J. L.; Dickson-Deane, C.; Galyen, K. (2011). "E-Learning, online learning, and distance learning environments: Are they the same?". *The Internet and Higher Education*. 14 (2): 129–135
12. Urbel, Karl: *Virtuality on the Students' and on the Teachers' sides*:
13. *A Multimedia and Internet based International Master Program*; ICEF Berlin GmbH (Eds.), *Proceedings on the 7th International Conference on Technology Supported Learning and Training – Online Educa*; Berlin, Germany; November 2001, pp. 133–136
14. Termos, Mohamad (2012). "Does the Classroom Performance System (CPS) Increase Students' Chances for Getting a Good Grade in College Core Courses and Increase Retention?". *International Journal of Technologies in Learning*. (1): 45–56.
15. Loutchko, Iouri; Kurbel, Karl; Pakhomov, Alexei: *Production and Delivery of Multimedia Courses for Internet Based Virtual Education*; The World Congress "Networked Learning in a Global Environment: Challenges and Solutions for Virtual Education", Berlin, Germany, May 1 – 4, 2002